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STUDY TO DEVELOP IMPROVED SPACECRAFT SNOW
SURVEY METHODS USING SKYLAB/EREP DATA

(EREP Investigation No. 420)

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Third Quarterly Progress Report
Covering the Period 15 September to 15 December 1973

Contract No. NAS 9-13305

Prepared for:

Principal Investigations Management Office
National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058

Technical Monitor: Larry B. York - Code TF6

PURPOSE OF INVESTIGATION

The purpose of this investigation is to compare and evaluate Skylab data for mapping of snow cover. Visual interpretation of the S190 photographs will be performed to map areas that are snow-covered. The S192 imagery and digital printouts, S193 data, and S194 data will then be compared to the S190 photographs to determine how much additional information on areal extent of snow can be obtained from various spectral bands, thermal data, and microwave data. Snow-depth and area measurements taken routinely by various Government agencies in the Sierra Nevada, Cascades, and Great Plains shall provide ground truth. The relatively high-resolution EREP data will be compared with television and radiometric measurements from other satellites, and available aircraft imagery, to determine the optimum future system for mapping the areal extent of snow. The results of this investigation will enable a more accurate assessment of the extent of snow cover in the United States and aid in prediction of run-off and better management of the country's water resources.

ACCOMPLISHMENTS DURING REPORTING PERIOD

During this reporting period the initial sample of digitized data from the SL-2 mission was received. Two magnetic tapes containing S194 data were received early in the reporting period; the other tapes, however, were not received until December. A listing of all the tapes now on hand is given in Table 1.

In addition to the magnetic tapes, certain data tabulations have also been received. These include the S191 Boresight Camera Pulse Correlation tabulations for DOY 154 (191830 to 193030) and the Universal Non-Imagery Header Record tabulations for the S193, DOY 157 (AVA), and the S194, DOY 111 (pre-flight). Near the end of the reporting period, the color positive prints of the SL-2 handheld camera photographs, requested in September, were received; the photographs show snow cover in the northern Cascades (Mt. Rainier and Mt. Adams) and in parts of Utah, Montana, Wyoming, and Colorado.

The S194 tapes have been printed out and the data are in the process of being analyzed. The remaining tapes were received too late in the reporting period to be processed. The analyses performed during this period

TABLE 1

DIGITIZED DATA (MAGNETIC TAPES) RECEIVED FOR SL-2 MISSION

Sensor	Data Product	DOY	GMT Time	EREP Pass	Test Site	Remarks
S191	S041-1	154	192352 to 192442	3	318107	2 Tapes
S192	Test	-	-	Pre- Flight	-	2 Head Alignment Tapes
S192	S051-3	154	192351 to 192401	3	318107	1 Tape
S193	S061-1	154	192150 to 192427	3	318107	2 Tapes
S193	S061-1	157	185553 to 185703	AVA	-	1 Tape
S194	S081-1	111	183613 to 183954	Pre- Flight	-	1 Tape
S194	S081-1	154	192322 to 192446	3	318107	1 Tape
S194	S081-1	162	151246 to 151340	8	318108	1 Tape

were held to a minimum, pending receipt of a more complete data sample. In particular, we are anxious to acquire the S192 data that were requested in August following review of the screening film. According to the GMT time interval indicated, the one S192 tape received to date covers Segment B of Test site 318107 (White Mountains); the other data requested have not been received, nor has any of the enlarged imagery been received.

TRAVEL SUMMARY

Mr. James Barnes, the Principal Investigator, visited Johnson Space Center on 13 December. The purpose of the visit was to participate in the SL-4 Visual Observations Team meeting. During the visit Mr. Barnes met with the Contract Technical Monitor to discuss the status of the EREP sensors, the schedule for processing of the data, and the progress of the investigation to data.

PLANS FOR THE NEXT REPORTING PERIOD

During the next reporting period, the magnetic tapes received in December will be processed. Analysis of the data contained on all of the tapes received to date will be initiated, following the procedures specified in the Work Statement of the subject contract.

Mission support will be provided for the SL-4 mission during the period from early January to the scheduled splashdown date in early February. Acceptable snow cover conditions should prevail in all five test sites during this period.

SUMMARY OUTLOOK

The EREP data collected on the SL-2 mission are sufficient to perform much of the analysis specified in the Work Statement of the subject contract. With considerable useful data anticipated during the latter part of the SL-4 mission, it is believed that the objectives of the study can be successfully met.

FINANCIAL REPORT

In accordance with Appendix A of the Work Statement of the subject contract, the Financial Management Report is being submitted as a separate document.

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DISCUSSION OF SIGNIFICANT RESULTS

No significant results were achieved during this reporting period.